



## CO2 adsorbers for upgrading of bio-gas to methan

Schill, Leonhard; Riisager, Anders; Fehrmann, Rasmus

*Published in:*  
Book of Abstracts. DTU's Sustain Conference 2015

*Publication date:*  
2015

*Document Version*  
Publisher's PDF, also known as Version of record

[Link back to DTU Orbit](#)

*Citation (APA):*  
Schill, L., Riisager, A., & Fehrmann, R. (2015). CO2 adsorbers for upgrading of bio-gas to methan. In *Book of Abstracts. DTU's Sustain Conference 2015* [E-31] Technical University of Denmark.

---

### General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

## CO<sub>2</sub> adsorbers for upgrading of bio-gas to methan.

Leonhard Schill<sup>1</sup>, Anders Riisager<sup>1</sup>, Rasmus Fehrmann\*<sup>1</sup>

<sup>1</sup>Centre for Catalysis and Sustainable Chemistry, Department of Chemistry, Building 207, Technical University of Denmark, DK-2800 Kgs. Lyngby, Denmark

\*Corresponding author email: rf@kemi.dtu.dk

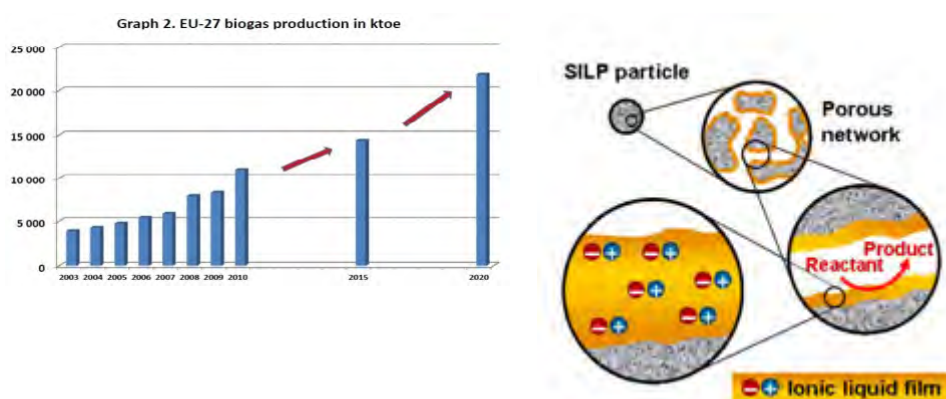


Figure 1: Growth of the EU biogas market.<sup>[1]</sup> Figure 2: Concept of Supported Ionic liquids (SILP)

The bio-gas market in the EU has experienced strong growth over the last 10 years and is expected to expand even further in the near future, see Figure 1. While the anaerobic digestion is a relatively mature technology, the upgrading of bio-gas (i.e. removal of CO<sub>2</sub> to yield pure methane) still needs to be optimized. Currently, the most widespread technology for CO<sub>2</sub> removal is treatment with aqueous amine solutions. However, implementing this technology at small biogas plants can be problematic, because it is not modular.

Using Ionic liquids which can reversibly bind CO<sub>2</sub> is an alternative way to upgrade bio-gas. However, these liquids are very viscous which makes the gas-uptake extremely slow. By forming a thin film of ionic liquids onto inorganic support materials like alumina and silica can remove the problem of slow gas-uptake. The resulting materials are also called "Supported Ionic Liquids" (SILP).

In order to integrate the SILP materials into gas filters, it is necessary to shape them into monolithic form. Our group has made some progress in this field.

References:

<sup>[1]</sup>: [The GreenGasGrids Project: Boosting the European biomethane market](#)